

Fig. 1

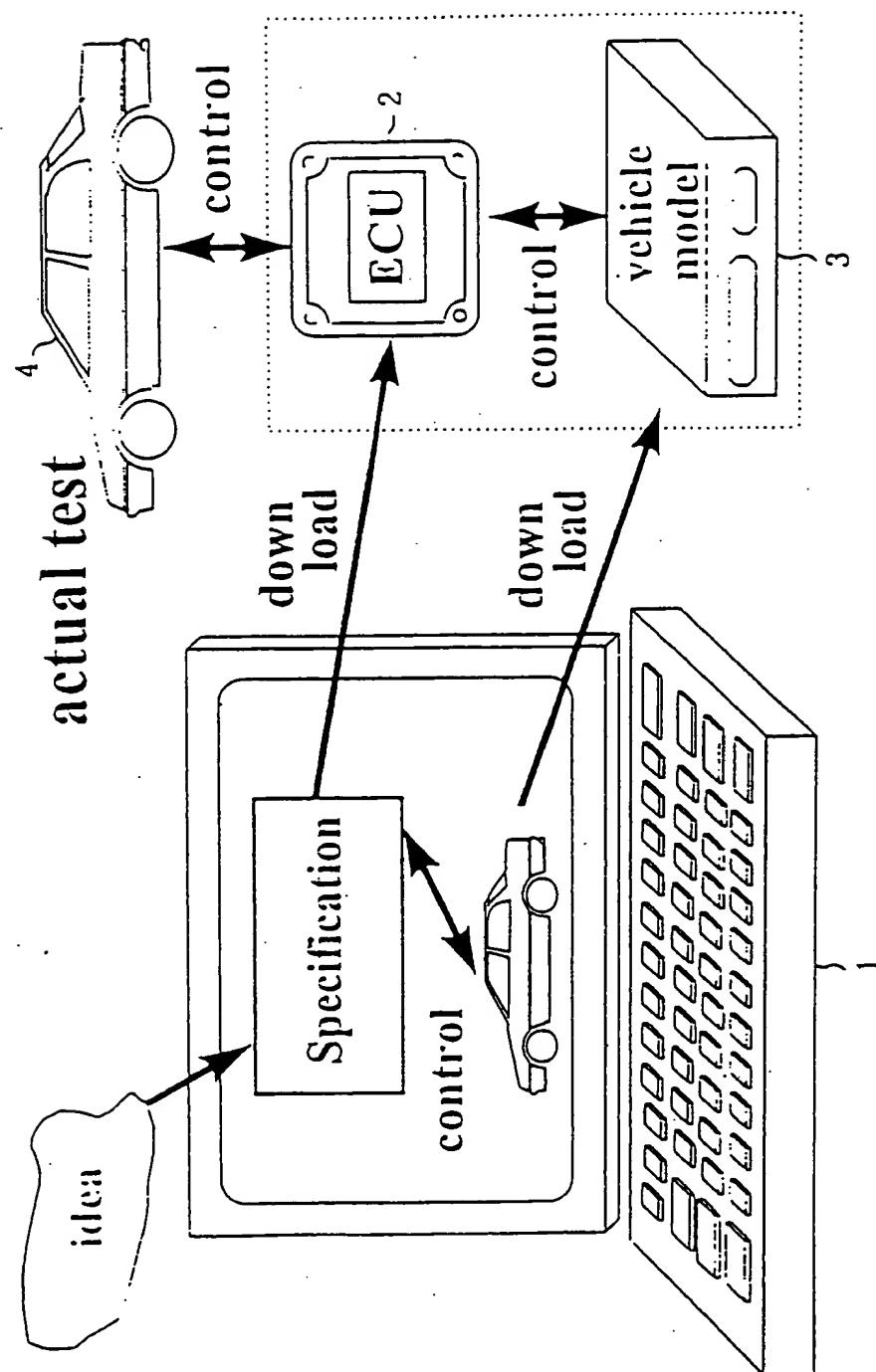


Fig. 2

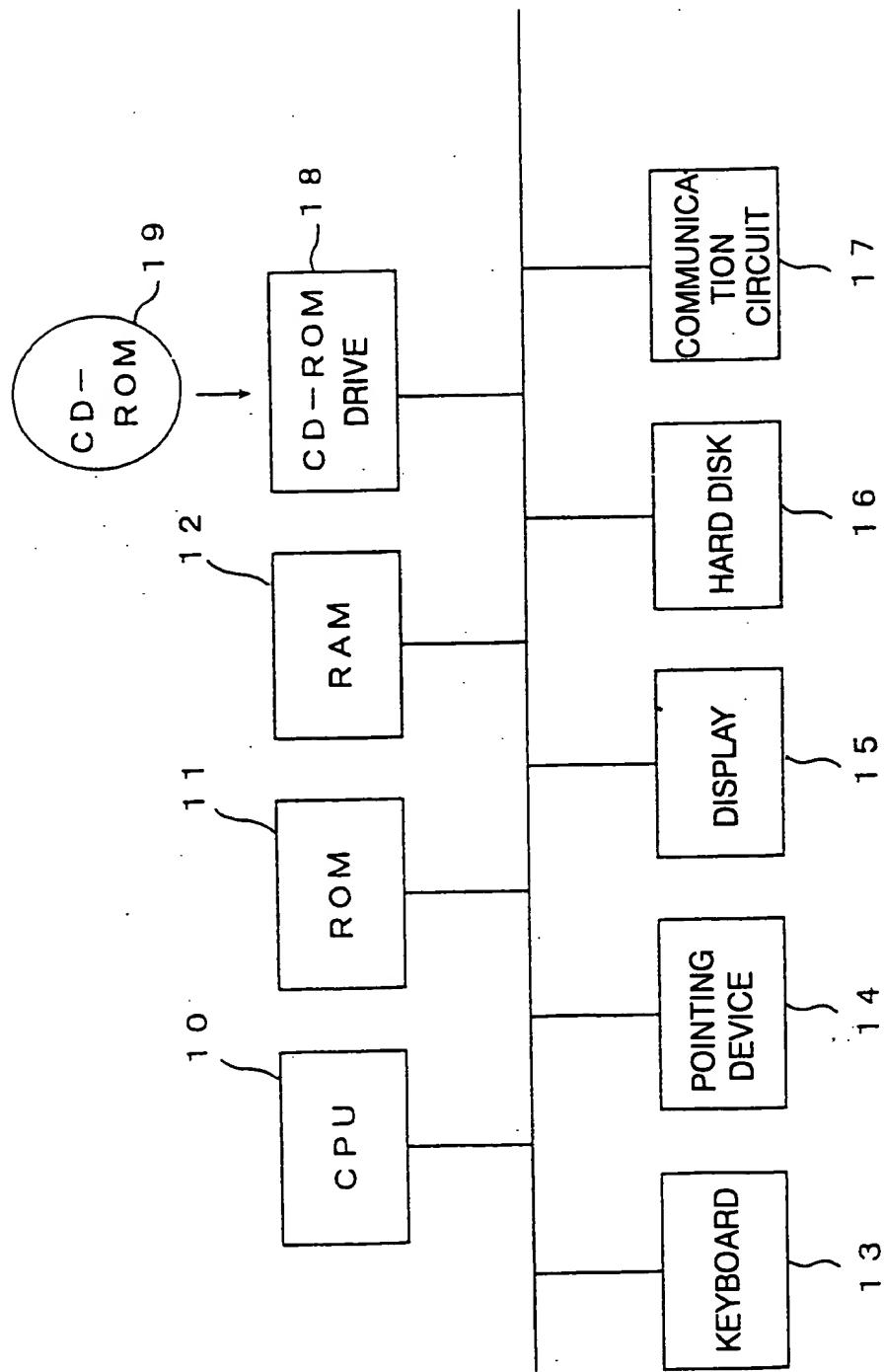


Fig. 3

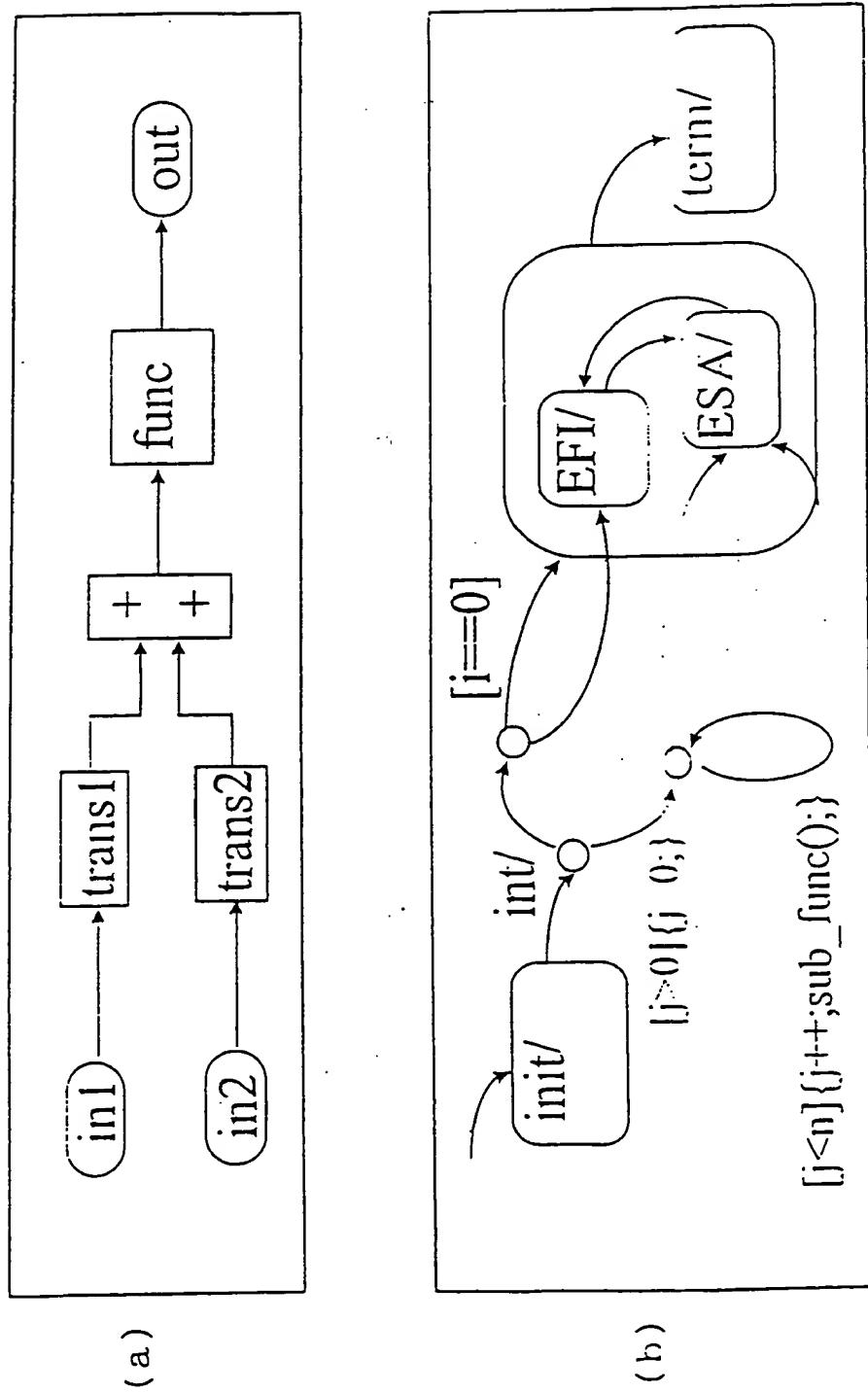


Fig. 4

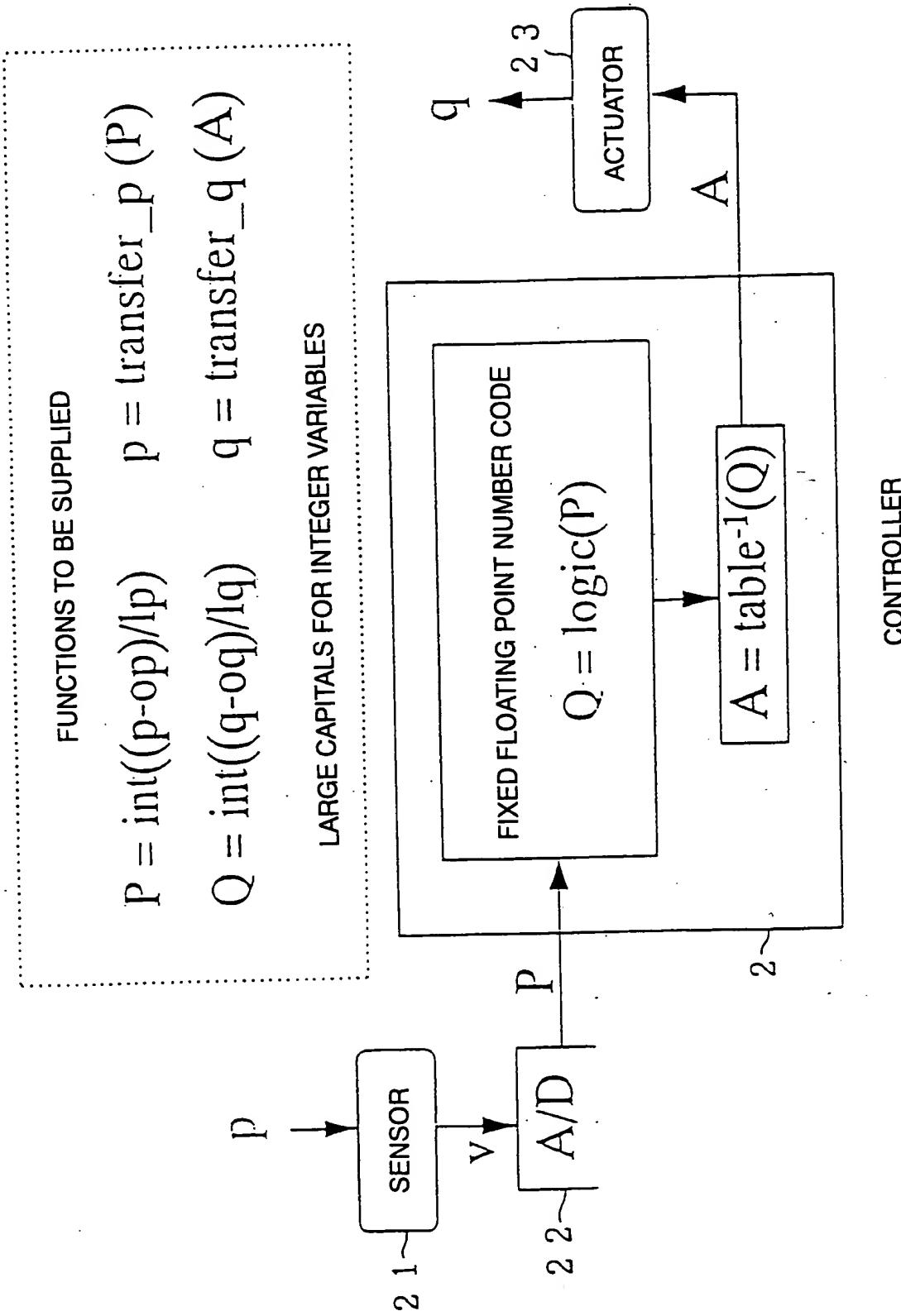


Fig. 5

$$y(k) = 0.7888 y(k-1) + 0.1784 y(k-2) - 0.1000 y(k-3) - 0.0010 u(k) + 0.0150 u(k-1) - 0.0040 u(k-2) - 0.0020 u(k-3)$$

EXAMPLE OF AN EXPRESSION INCLUDING
A FLOATING POINT NUMBER

Fig. 6

CONVERSION EXPRESSION
FLOATING POINT NUMBER \rightarrow INTEGER
 $x_int = (x_float - OFFSET)/SLOPE$

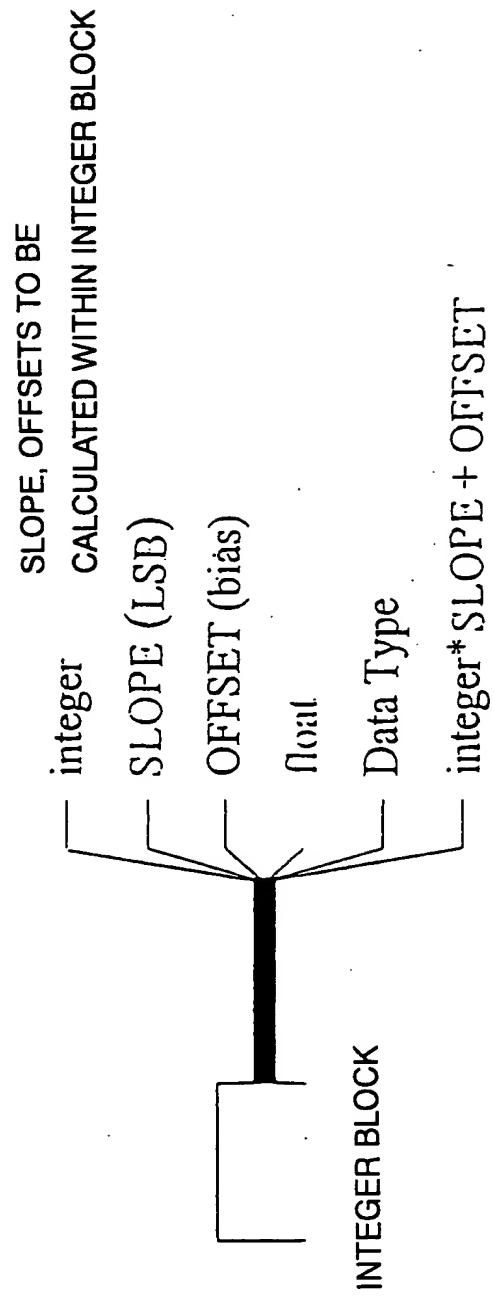
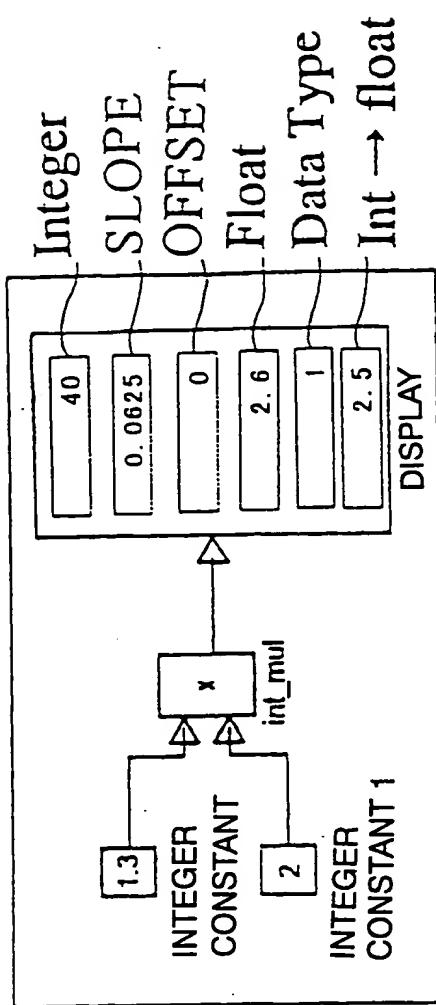


Fig. 7



INPUT 1 : SLOPE 0.25
OFFSET 0

INPUT 2 : SLOPE 0.25
OFFSET 0

Fig. 8

(1)	
MULTIPLICATION	
INPUT 1	INPUT 2
$\frac{(x - \text{offset1})}{\text{slope1}} \times \frac{(y - \text{offset2})}{\text{slope2}}$	
OUTPUT	
	$= \frac{xy - \text{offset1} * y - x * \text{offset2} + \text{offset1} * \text{offset2}}{\text{slope1} * \text{slope2}}$
OUTPUT SLOPE : slope1 * slope2	
OUTPUT OFFSET : offset1 * y + x * offset2 - offset1 * offset2	

Fig. 9

(2)

MULTIPLICATION

INPUT 1

$$\left(\frac{(x - \text{offset1})}{\text{slope1}} + \frac{\text{offset1}}{\text{slope1}} \right) \times \left(\frac{\left(\frac{(y - \text{offset2})}{\text{slope2}} + \frac{\text{offset2}}{\text{slope2}} \right)}{Y_{\text{int}}} \right) = \frac{XY}{\text{slope1} * \text{slope2}}$$

INPUT 2

DESIGNATED SLOPE : slope_0 → OUTPUT
 DESIGNATED OFFSET : offset_0 → OUTPUT
 $OFF1_{\text{int}}$: offset1/slope1, $OFF2_{\text{int}}$: offset2/slope2

MULTIPLIED INTEGER VALUE :

$$((X_{\text{int}} + OFF1_{\text{int}}) * (Y_{\text{int}} + OFF2_{\text{int}})) * \text{slope1} * \text{slope2} - \text{offset}_0 / \text{slope}_0$$

Fig. 10

(1)

(1) ALL INTEGER LINES ARE VECTORS CONSTITUTING OF THE BELOW

y(1) = integer value
y(2) = LSB
y(3) = OFFSET
y(4) = floating point value
y(5) = signed or unsigned
y(6) = CARRY
y(7) = ZERO
y(8) = NEGATIVE

(2) INTEGER LOGIC SUPPORT TOOL HAS BLOCKS BELOW

(1) CONVERSION TO INTEGER	(9) 2D TABLE LOOK UP
(2) CONVERSION TO FLOATING	(10) SPLIT
(3) ADDITION	(11) UNIT DELAY
(4) MULTIPLICATION	(12) INTEGER SCOPE
(5) DIVISION	
(6) SURPLUS	
(7) SHIFT	
(8) 1D TABLE LOOK UP	

Fig. 11

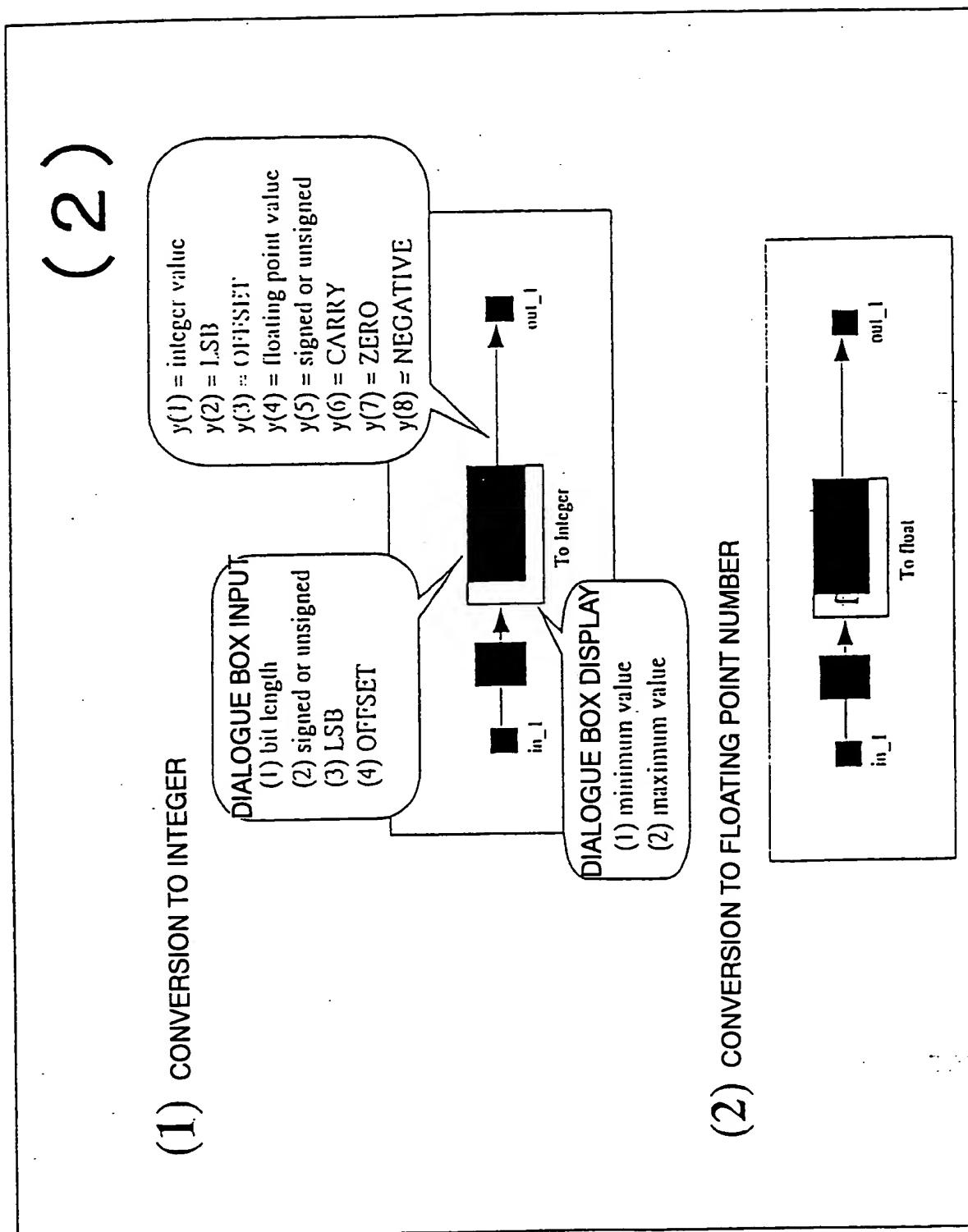


Fig. 12

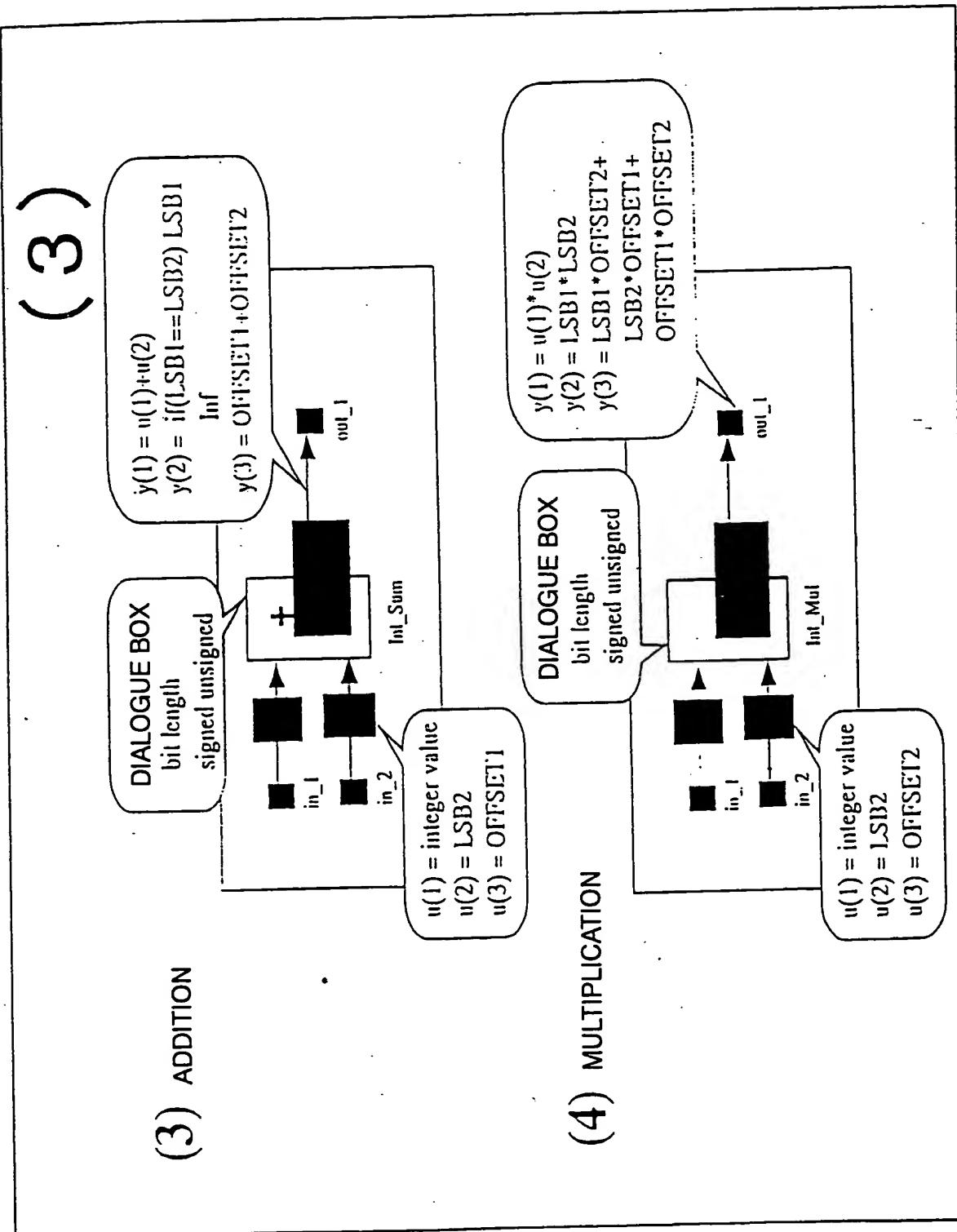


Fig. 13

(4)

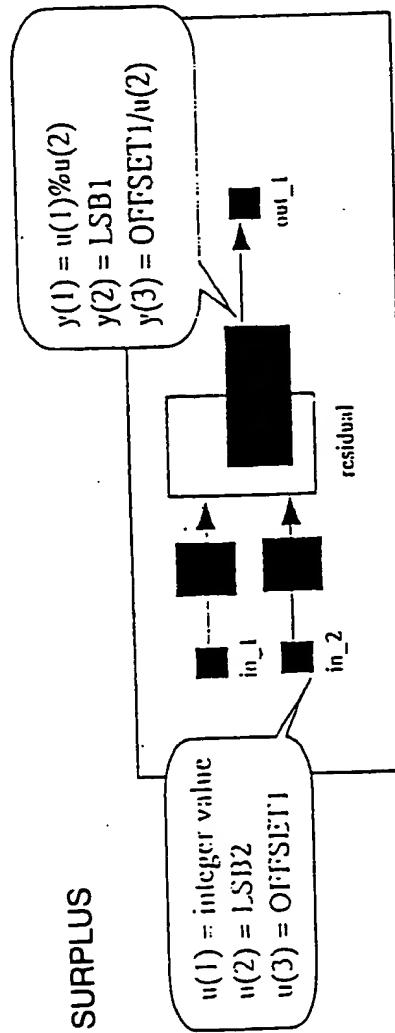
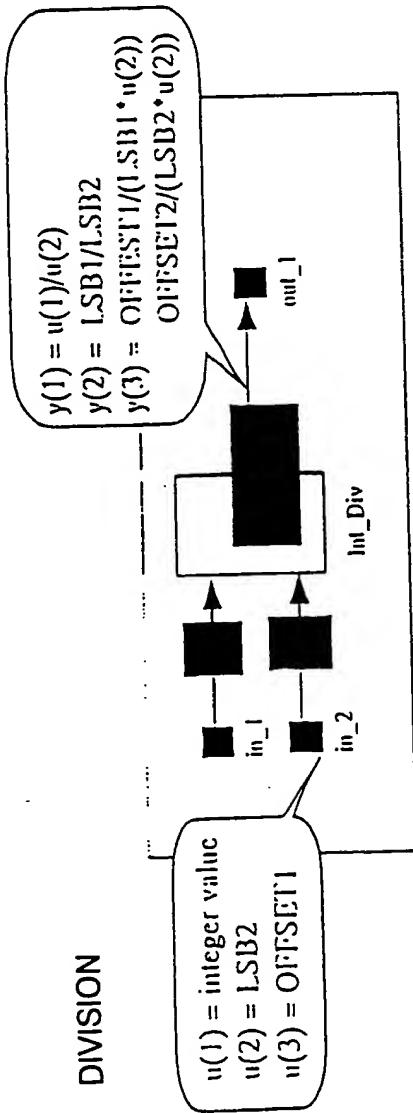
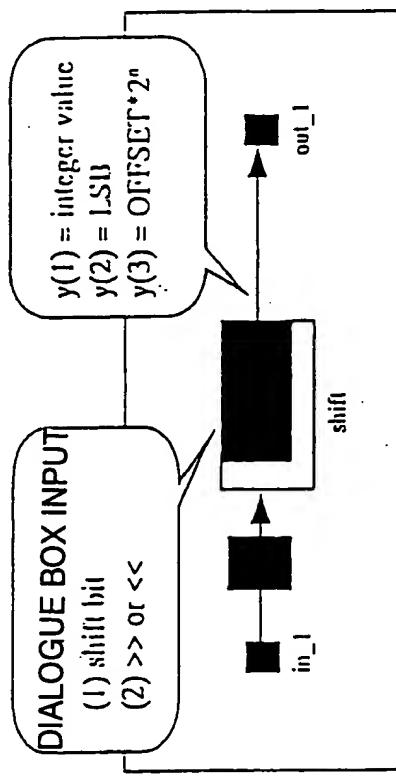


Fig. 14

(5)

(7) SHIFT



(8) (9) TABLE

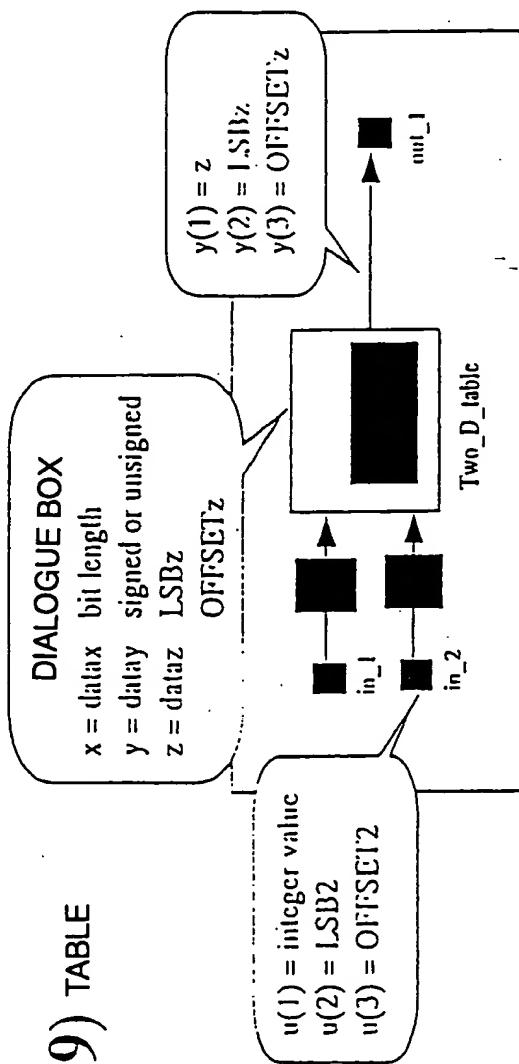


Fig. 15

(6)

$y(1) = \text{upper}16\text{ bit data}$
 or
 lower 16 bit data
 $y(2) = \text{LSB} \cdot 256 \cdot 256$ or
 or
 LSB
 $y(3) = \text{OFFSET}$

DIALOGUE BOX INPUT
(1) upper or lower

(10) SPLIT

$u(1) = \text{integer value}$
 $u(2) = \text{LSB}$
 $u(3) = \text{OFFSET}$



(11) UNIT DELAY

$y(1) = u(k-1)$
 $y(2) = 1\text{SB}$
 $y(3) = \text{OFFSET}$

$u(1) = \text{integer value}$
 $u(2) = \text{LSB}$
 $u(3) = \text{OFFSET}$

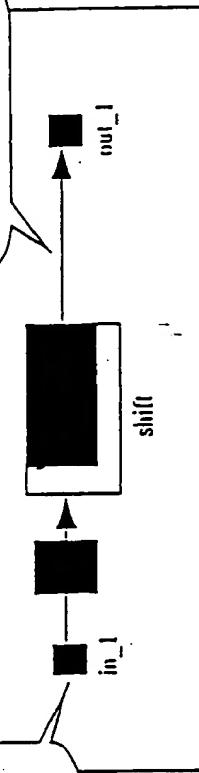


Fig. 16

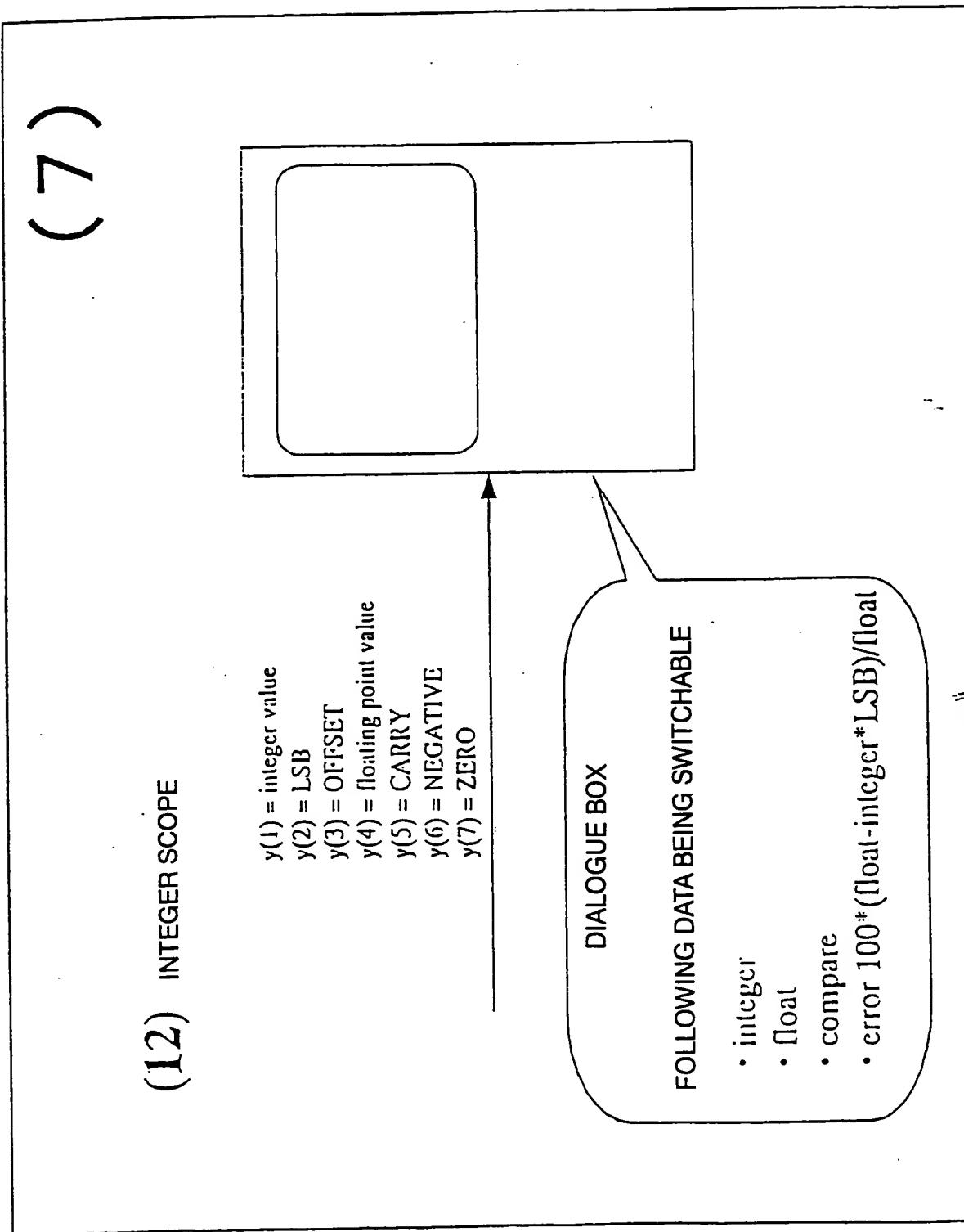


Fig. 17

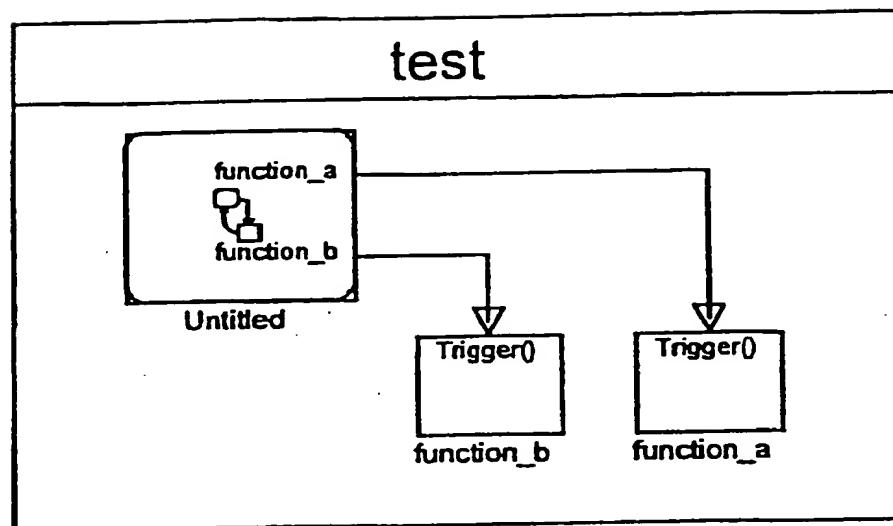


Fig. 18

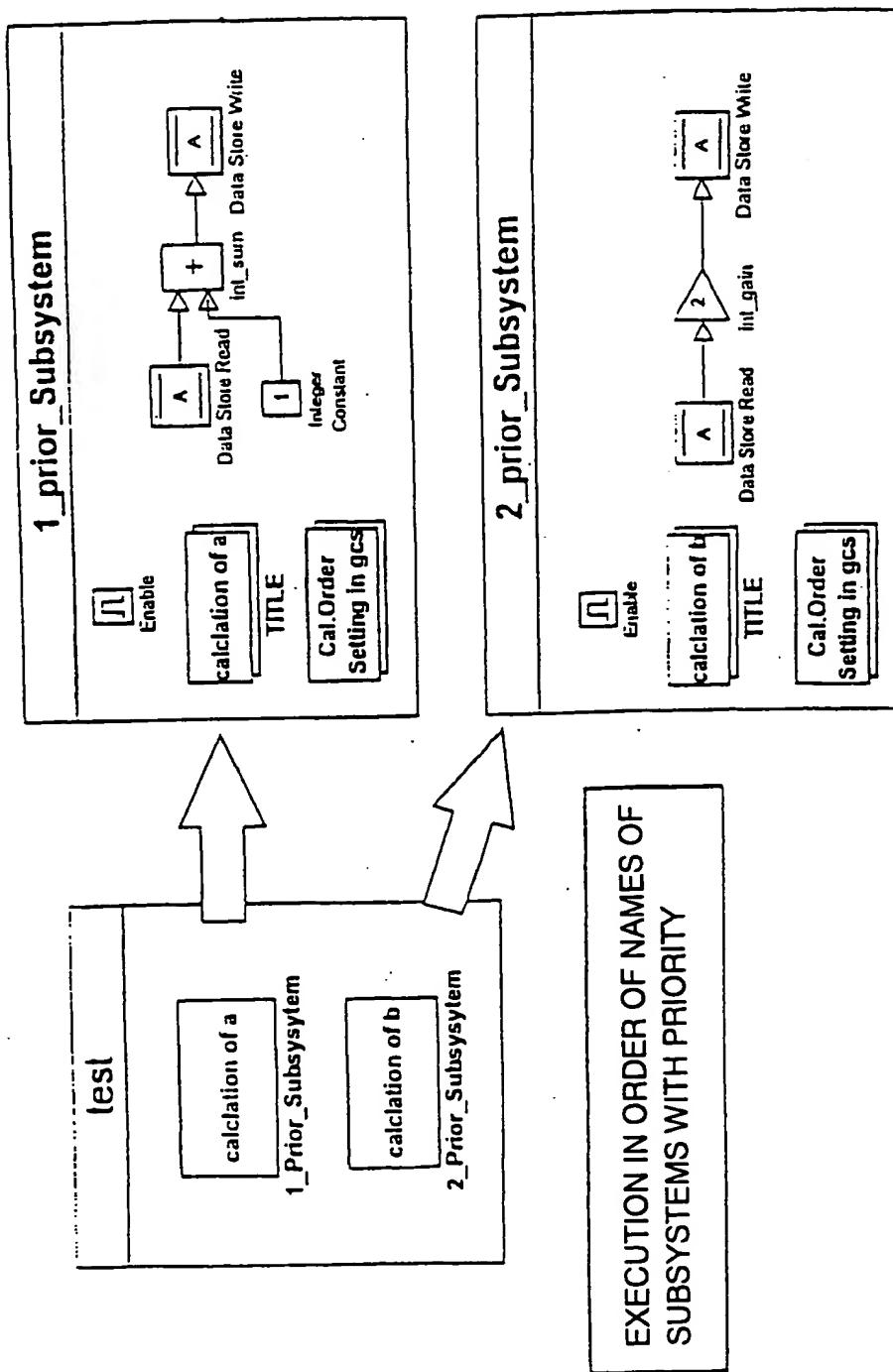


Fig. 19

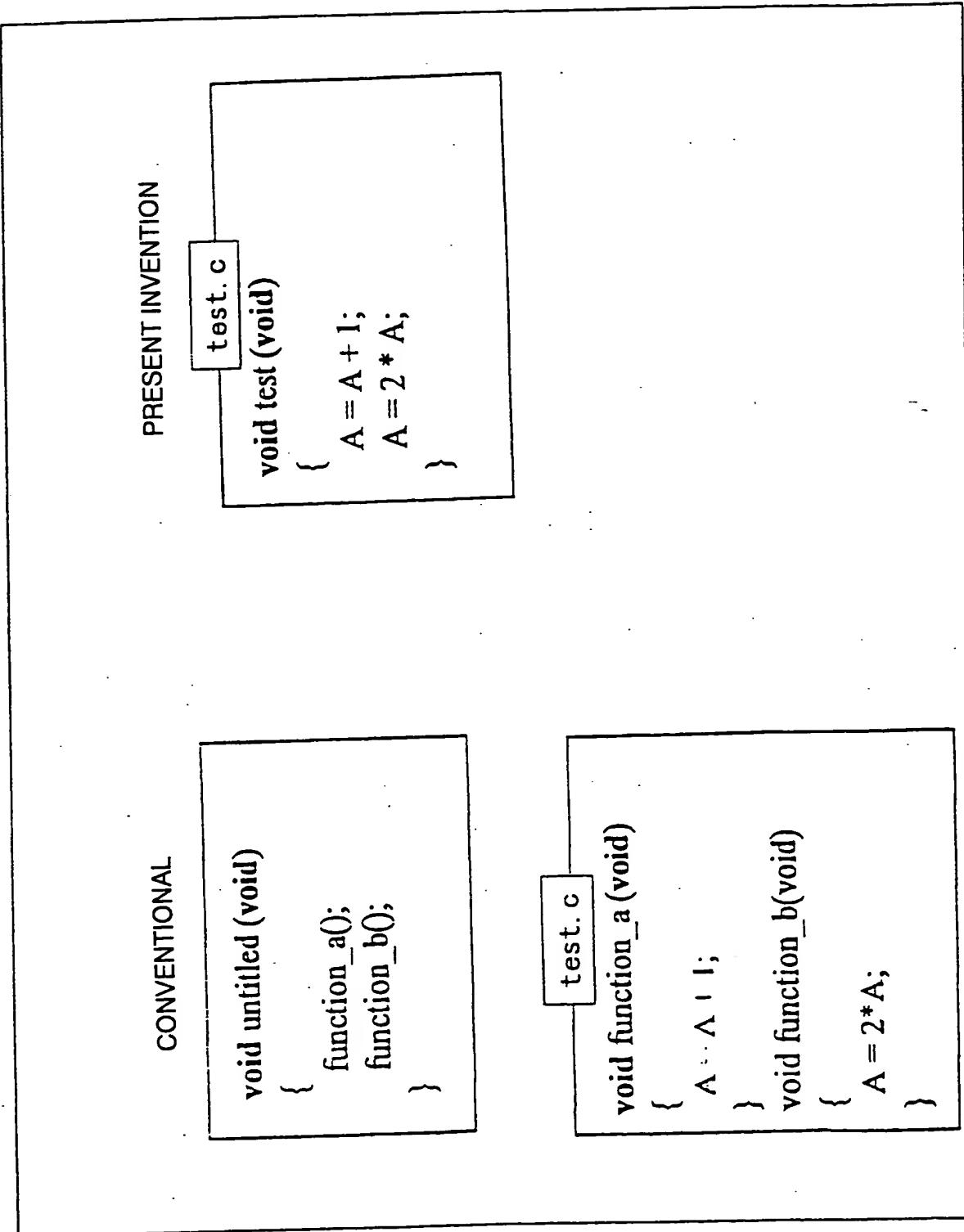
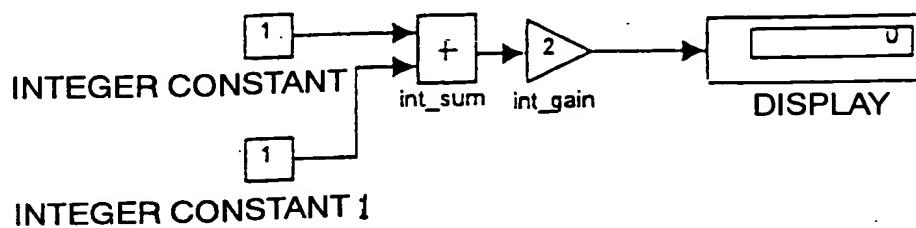


Fig. 20



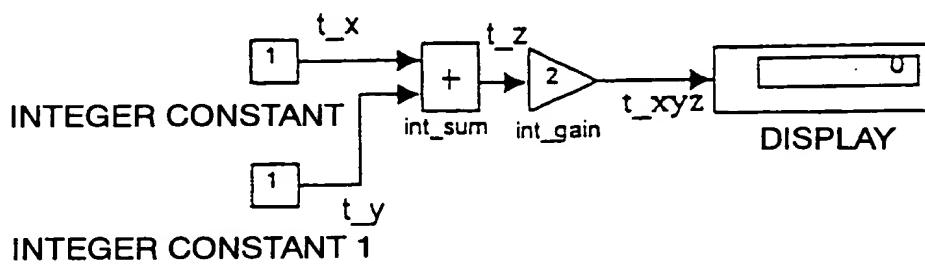
```
void untitled(void)
{
    s16 s1_S_Function;
    s16 s2_S_Function;
    s16 s4_S_Function;
    s16 s3_S_Function;

    /* int_sum : s4_S_Function */
    s4_S_Function = s1_S_Function+s2_S_Function;

    /* int_gain : s3_S_Function */
    s3_S_Function = (s16)(2*s4_S_Function);

    /* (no update to perform in root mode!) */
}
```

Fig. 21



```

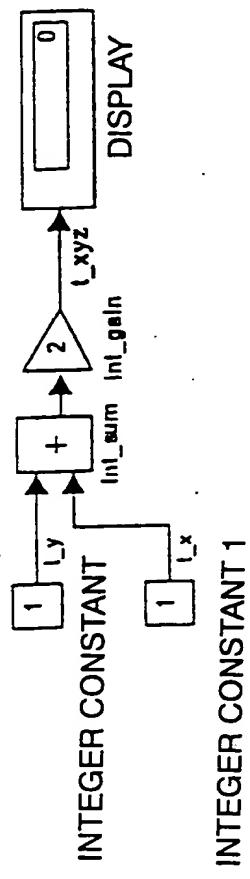
void untitled(void)
{
    s16 t_x;
    s16 t_y;
    s16 t_z;
    s16 t_xyz;

    /* int_sum : s4_S_Function */
    t_z = t_x + t_y;

    /* int_gain : s3_S_Function */
    t_xyz = (s16)(2*t_z);

    /* (no update to perform in root model) */
}
  
```

Fig. 22



WITHOUT GROUPING

```

void untitled(void)
{
    s16 t_x;
    s16 t_y;
    s16 s4_S_Function;
    s16 t_xyz;

    /* int_gain : s3_S_Function */
    t_xyz = (s16)(2*s4_S_Function);
}

```

GROUPING

```

void untitled(void)
{
    s16 t_x;
    s16 t_y;
    s16 s4_S_Function;
    s16 t_xyz;

    /* int_gain : s3_S_Function */
    t_xyz = (s16)(2*t_x+t_y);
}

```

Fig. 23

GROUPING

	ID	Signal Label
(a)	s1_S_Function	t_x

	ID	EXPRESSION
(b)	s1_S_Function	$x_1 * x_2$

Fig. 24

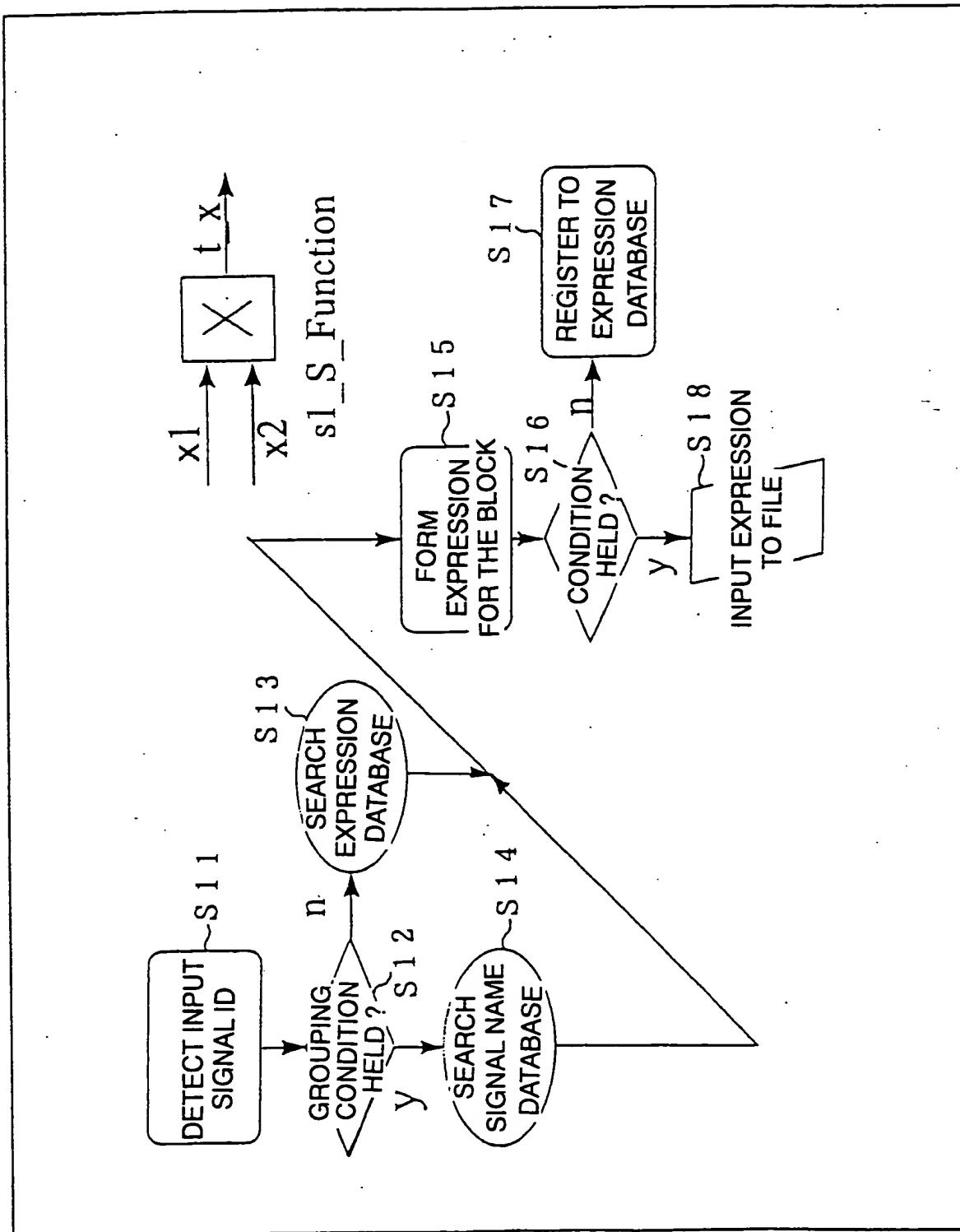


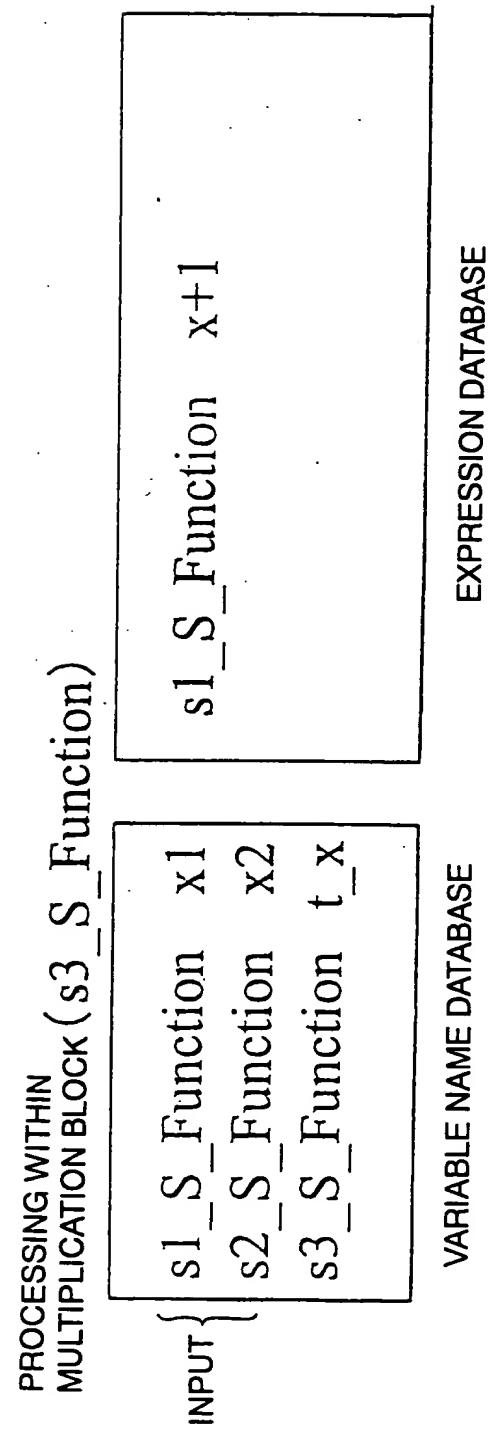
Fig. 25

Fig. 26

